

WHAT IS CLAIMED IS:

1 1. A method of treating a cornea of an eye of a patient to mitigate
2 presbyopia, the eye having a pupil and a cornea, the method comprising:
3 identifying a multifocal ablation shape having a first region providing a near
4 vision correction and a second region providing a far vision correction;
5 adjusting an ablation cut profile of the multifocal ablation shape in response to
6 the size of the pupil so as to provide a balance of the near vision correction provided by the
7 first region and the far vision correction provided by the second region for the patient;
8 ablating the eye with a series of laser beam pulses according to the adjusted
9 ablation cut profile.

1 2. The method of claim 1, wherein the ablation cut profile further
2 comprises a third region providing an intermediate optical surface having an optical power
3 continuously varying between the first region providing near vision correction and the second
4 region providing far vision correction, so as to provide intermediate vision correction with the
5 intermediate optical surface.

1 3. The method of claim 2, wherein the intermediate optical surface varies
2 from a first optical power near the first region to a second optical power near the second
3 region.

1 4. The method of claim 3, wherein the difference in optical power
2 between the first optical power near the first region and the second optical power near the
3 second region has a range from about 1 to 4 D.

1 5. The method of claim 1, wherein the first region is disposed centrally in
2 relation to the pupil of the eye.

1 6. The method of claim 1, further comprising scaling the ablation cut
2 profile in relation to the size of the pupil.

1 7. The method of claim 6, wherein the step of scaling of the ablation cut
2 profile is done so as to scale the optical power of the ablation cut profile in relation to the size
3 of the pupil.

4 8. The method of claim 7 wherein the optical power of the first region
5 remains constant during the step of scaling.

1 9. The method of claim 7 wherein the optical power of the second region
2 remains constant during the step of scaling.

1 10. A system for treating a cornea of an eye of a patient to mitigate
2 presbyopia with a multifocal ablation shape, the eye having a pupil and a cornea, the system
3 comprising:

4 a laser for making a beam of an ablative light energy;

5 a processor in electrical communication with the laser and controlling a
6 distribution of a series of laser beam pulses to ablate the multifocal shape on the eye, the
7 multifocal ablation shape producing a first region of the cornea providing a near vision
8 correction and a second region of the cornea providing a far vision correction, the processor
9 determining the distribution of laser beam pulses in response to a signal related to a size of
10 the pupil so as to balance the near vision correction and the far vision correction of the
11 multifocal treatment for the patient.

1 11 . The system of claim 10 wherein the first region providing near vision
2 correction is disposed centrally in relation to the pupil of the eye.

1 12 . The system of claim 10 wherein the near vision correction and the far
2 vision correction are balanced with a variable of a refractive correction in response to the
3 size of the pupil.

1 13. The system of claim 11 wherein the variable of the refractive
2 correction includes a dimension across the refractive correction.

1 14. The system of claim 10 wherein the near vision correction and the far
2 vision correction are balanced in response to the size of the pupil so as to scale a dimension
3 across the first region providing near vision correction in relation to the size of the pupil.

1 15. The system of claim 10 wherein the near vision correction and the far
2 vision correction are balanced in response to the size of the pupil so as to scale a dimension
3 across the second region providing far vision correction in relation to the size of the pupil.